

**THIS OPINION WAS NOT WRITTEN FOR PUBLICATION**

The opinion in support of the decision being entered today  
(1) was not written for publication in a law journal and  
(2) is not binding precedent of the Board.

Paper No. 12

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* JOHN C. TROCCIOLA,  
CRAIG R. SCHROLL and ROGER R. LESIEUR

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Appeal No. 94-4217  
Application 07/853,663<sup>1</sup>

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On BRIEF

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Before JOHN D. SMITH, GARRIS and WARREN, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

*Decision on Appeal*

This is an appeal under 35 U.S.C. ' 134 from the decision of the examiner finally rejecting claims 1 through 6, all of the claims in the application. Claim 1 is illustrative of the claims on appeal:

1. A method of reducing to a desired minimum level the concentration of carbon monoxide in a gaseous medium that also contains at least hydrogen, by selective catalytic oxidation in the presence of gaseous oxygen using a catalyst which is capable of oxidizing carbon monoxide in an exothermic reaction at temperatures within a given temperature range, but is

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<sup>1</sup> Application for patent filed March 19, 1992.

rapidly inactivated when exposed to high carbon monoxide concentrations at less than a threshold temperature within the given temperature range, and incapable of reducing the carbon monoxide concentration to the minimum level when exposed to carbon monoxide at above the threshold temperature, comprising the steps of

confining a quantity of the catalyst;

passing the gaseous medium through the confined catalyst quantity from an inlet portion to an outlet portion thereof;

introducing gaseous oxygen into at least the inlet portion of the confined catalyst quantity; and

controlling the temperature encountered in the confined catalyst quantity in such a manner that the exothermic reaction takes place initially at above the threshold temperature in the inlet portion and subsequently at below the same threshold temperature in the outlet portion.

The appealed claims as represented by claim 1 are drawn to a method of reducing the concentration of carbon monoxide in a gas which contains at least hydrogen by selective catalytic oxidation of the carbon monoxide in the presence of oxygen and a catalyst which has the characteristics of oxidizing carbon monoxide in an exothermic reaction at temperatures within a given temperature range and, with respect to a threshold temperature within that range, of being rapidly inactivated when exposed to high carbon monoxide concentrations above the threshold temperature as well as incapable of reducing the carbon monoxide concentration to the minimum level when exposed to carbon monoxide below the threshold temperature. The catalyst is confined such that the gas and at least some of the oxygen is introduced into an inlet portion and removed in an outlet portion with the temperature of the confined catalyst controlled such that the exothermic oxidation of the carbon monoxide takes place initially above the threshold temperature of the catalyst in

the inlet portion and below the same threshold temperature in the outlet portion.

The reference relied on by the examiner is:  
Marion L. Brown, Jr., & Albert W. Green, "Purifying Hydrogen by ... Selective Oxidation of Carbon Monoxide," 52 *Industrial and Engineering Chemistry*, no. 10, 841-44 (October 1960) (Brown).

The examiner has rejected claims 1 through 6 on appeal under 35 U.S.C. ' 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention, and under 35 U.S.C. ' 103 as being unpatentable over Brown. We reverse.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the examiner's answer and to appellants' brief for a complete exposition thereof.

#### *Opinion*

In analyzing appealed claim 1 with respect to the compliance thereof with the requirement of ' 112, second paragraph, we are guided by the directive of our reviewing court that "[t]he operative standard for determining whether this requirement is met is 'whether those skilled in the art would understand what is claimed when the claim is read in light of the specification'." *The Beachcombers, International v. WildeWood Creative Products*, 31 F.3d 1154, 1158, 31 USPQ2d 1653, 1656 (Fed. Cir. 1994), quoting *Orthokinetics Inc v. Safety Travel Chairs Inc.*, 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986). Indeed, we are of the view that one skilled in this art would read the claim to require a catalyst which has the characteristics of oxidizing carbon monoxide in an exothermic reaction at temperatures within a

given temperature range and, with respect to a threshold temperature within that range, of being rapidly inactivated when exposed to high carbon monoxide concentrations above the threshold temperature as well as incapable of reducing the carbon monoxide concentration to the minimum level when exposed to carbon monoxide below the threshold temperature. Such a reading is clearly consistent with the specification which recites the same definition (page 4) and discloses a catalyst in the same terms that has a threshold temperature of "about 220°F" (pages 10 and 13). Accordingly, we reverse the ground of rejection based on ' 112, second paragraph.

Turning now to the ground of rejection based on ' 103, we have carefully reviewed the record on this appeal and based thereon conclude that the examiner has failed to establish that Brown in its entirety would have reasonably suggested the method of appealed claim 1 as a whole to one of ordinary skill in this art at the time the claimed invention was made and thus has not made out a *prima facie* case of obviousness.

In comparing the claimed invention as a whole with the teachings of Brown, we observe that appellants have described the "threshold temperature" as being a single temperature point within a range. They have used this same language to describe the disclosure of Brown in their specification (pages 1-3). However, it is apparent to us that Brown discloses a general "selectivity zone" for catalysts that can be used to selectively oxidize carbon monoxide which is a temperature range of 266°F to 320°F. that can vary with variations in the oxygen concentration and falls within the temperature range of 250°F to 350°F suggested for the catalyst bed of the first stage of the proposed two stage reactor (pages 842, col. 3,

and 844, col. 3). Thus, the claim limitation of the use of catalysts which have a single point "threshold temperature" is not suggested by Brown. Furthermore, the examiner has not provided any evidence or scientific reasoning on this record why the pilot plant data (Table I.) or the discussion thereof in Brown (page 844, col. 2) would have reasonably suggested conducting the selective catalytic oxidation of carbon monoxide by a method wherein the exothermic reaction is initially conducted above the "threshold temperature" in the inlet portion and subsequently below that temperature in the outlet portion of the catalyst bed to one of ordinary skill in this art and we fail to ascertain any such reason therefrom. Accordingly, the record before us supports the inference that the examiner relied on information gleaned from appellants' disclosure in formulating this ground of rejection. See *In re Dow Chemical*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531-32 (Fed. Cir. 1988).

The examiner's decision is reversed.

*Reversed*

Appeal No. 94-4217  
Application 07/853,663

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| JOHN D. SMITH               | ) |                 |
| Administrative Patent Judge | ) |                 |
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|                             | ) |                 |
| BRADLEY R. GARRIS           | ) | BOARD OF PATENT |
| Administrative Patent Judge | ) | APPEALS AND     |
|                             | ) | INTERFERENCES   |
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| CHARLES F. WARREN           | ) |                 |
| Administrative Patent Judge | ) |                 |

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